

PROJECTION SYSTEM WITH FOLDED OPTICAL PATH

ABSTRACT OF THE DISCLOSURE

A high throughput, compact image display apparatus comprises a source unit to generate a spatially uniform light beam that propagates along a first beam path in a first direction. The image display apparatus also comprises an imaging unit to collect and focus the light beam. The imaging unit includes a first refractive optical element disposed in the first beam path, a second refractive optical element disposed in the first beam path, a first reflecting mirror disposed in the first beam path, and a second reflecting mirror, having a concave reflecting surface, disposed in a second beam path defined by the first reflecting mirror and the second reflecting mirror. The second beam path is oriented in a second direction different from the first direction. The image display apparatus also comprises a digital micromirror device ("DMD") to receive the light beam reflected by the second reflecting mirror. The DMD is disposed in a third beam path defined by the second reflecting mirror and the DMD. The third beam path is oriented in a third direction different from the second direction. The image display apparatus also includes a projection lens to collect and project the light beam reflected from the DMD. The projection lens is disposed in a fourth beam path defined by the DMD and the projection lens, that is oriented in a fourth direction different from the third direction.